

ABSTRACT

An optical fiber moisture sensor that can be used to sense moisture present in gas phase in a wide range of concentrations is provided, as well techniques for making the same. The present invention includes a method that utilizes the light scattering phenomenon which occurs in a porous sol-gel silica by coating an optical fiber core with such silica. Thus, a porous sol-gel silica polymer coated on an optical fiber core forms the transducer of an optical fiber moisture sensor according to an embodiment. The resulting optical fiber sensor of the present invention can be used in various applications, including to sense moisture content in indoor/outdoor air, soil, concrete, and low/high temperature gas streams.